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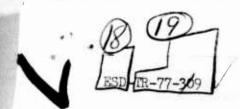
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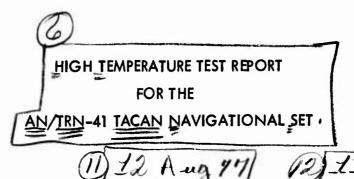






Report No. /131500-612 12 August 1977

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Contract No. F19628-75-C-0200 CDRL Item A00Y

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High Temperature Test Report for the	ne AN/TRN-41	
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18. SUPPLEMENTARY NOTES		
19. KEY WORDS (Continue on reverse side if necessary and	d Identify by block number)	)
AN/TRN-41 TACAN Navigational Set		!
M., 2		
20. ABSTRACT (Continue on reverse side if necessary and	identify by block number)	
This report describes the high tem Test Plan for Navigational Set, TAG		defined in the Equipment
	1	

#### HIGH TEMPERATURE TEST REPORT

#### for the

#### NAVIGATIONAL SET, TACAN, AN/TRN-41

This report describes the high temperature test as defined in the Equipment Test Plan for Navigational Set, TACAN, AN/TRN-41, 131500-415.

- 1. Test Identification. High Temperature test as defined in Appendix IV-B (high temperature test procedure) of the Equipment Test Plan for Navigational Set, TACAN, AN/TRN-41.
- 2. Functional Purpose of Test. This test forms a part of the AN/TRN-41 system qualification tests.
- 3. Test Objectives. To demonstrate that the AN/TRN-41 will meet the high temperature requirements of paragraphs 3.2.5.1.1 and 4.2.1.4.3.2 of Specification No. 404L-701-5017A, Part 1 of 2 parts (20 August 1976).

4. Description of Test Article. The AN/TRN-41 system consisting of the following was

used for the high temperature tests:

Receiver-Transmitter	RT-1201/T		012:3	Sellon
Antenna	AS-3132/T		e	54 m2
Antenna Support	AB-1237/T	70. N		
Filter, DC Power	F-1439/T	ACC = SS .	S	•
Interconnecting Cables		¥C	NTIS	000

5. Summary of Test Results. The AN/TRN-41 showed no functional or physical degradation during the high temperature test.

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- 6. Description of Test Facilities and Procedures. The test facilities and test procedures are described in Appendix IV-B of the Equipment Test Plan.
- 7. Test Setup Diagrams. The test setup diagrams are provided in Appendix IV-B of the Equipment Test Plan.

- 8. Test Equipment. See Attachment 1 for test equipment used for the high temperature test and the pre-test, test, and post-test operational tests.
- 9. Test Data Attachment 2 contains the data sheets for the high temperature test, pre-test, test, and post-test operational tests and the chamber data sheets.
- 10. Test Conditions. The system was conditioned at +71°C and then operated at +71°C.
- 11. Test results and Analysis. During the alarm test of the system at high temperature, the alarm circuitry failed to work. This was caused by the failure of integrated circuit 1A1U7. The integrated circuit was replaced and the high temperature test repeated. The system occasionally alarmed, but could be reset and all parameters checked during pre-test, test and post-test, operational tests. After the system was returned to room temperature, the RT was checked for the cause of the occasional alarms. These were caused by a selectable resistor 1A7R13 on the 6 dB Down Detector CCA (1A7) being selected for marginal operation. This was corrected by changing the value of the selectable resistor (from 180K to 220K) to provide proper operation. The system passed functional test and no physical degradation was observed by visual inspection.
- 12. Certification. The data sheets shown in Attachment 2 have been signed by a Montek Quality Assurance representative and a DCAS representative, certifying that the test results are authentic, accurate, current and in accordance with the related test plan.

ATTACHMENT 1

TEST EQUIPMENT

# TEST EQUIPMENT

Description/Manufacturer	Model	Calibration Due Date
Oscilloscope, Tektronix	465	7/6/77
Signal Generator, RF, H.P.	612A	6/23/77
Peak Power Meter, HP	8900B	9/19/77
Pulse Generator, Data Pulse	1108	5/12/77
Counter, Fluke	1953	8/12/77
Half-Ampl. Det. Montek	131500-702	N/A
RF Detector, Montek	1 35203-100	N/A
Monitor Ant., Montek	006300	N/A
Test Box - Interconnection - Montek	131500-703	N/A
Power Supply HP	6274B	1/16/78
Power Supply Acopian		12/9/77
Power Supply, Sorensen	QR4075A	9/19/77
Directional Coupler 20 dB, Narda	3042B	N/A
Directional Coupler 10 dB, Microlab	CBA-78	N/A
Variable Attenuator, Weinschel 0-10 dB	905	N/A
RF Attenuator, Weinschel	10 dB	N/A
Multimeter, Fluke	8120A	N/A 8/2/77
Temperature Chamber, Tenney Engineering	27T100-350	
Temperature Recorder and Controller, Honeywell	15215-PS-295-111	-91 9/9/77

ATTACHMENT 2

DATA SHEETS

# APPENDIX IV-K

# DATA SHEET ENVIRONMENTAL TEST

TEST HIC	SH TEMP.	from	4/28/77
SYSTEM 00	2	DATE to	5/2/77
		ACCEPTABLE	X
			E
DEMARKS +		11	
	he system was subjected to high temperature tes		
	31500-415 appendix IV-B. At the conclusion o		
	s reviewed and there was no degradation of perf	ormance observe	d. No
discrepancie	es were noted during the visual inspection.	·	
<del>+= :                                   </del>			
DISCREPANCIE	<u>s</u>		
	SIGN OFF INFORMATION	1	
ENVIRONMENT	AL TEST ENGINEER	DATE	
REPRESENTATI	IVE ENGINEER BG TAYLOR by Jankogen	DATE 5/2/	77
***************************************			
QA REPRESENT	ATIVE M. B. Que	DATE 5/2	77
		7	,
DCASD OR AF C	CONCURRENCE That I Sheet	DATE 5-2-	77
JUNE OILUI			

# DATA SHEET OPERATIONAL TESTS AN/TRN-41

BEST AVAILABLE COPY

Test High Temperature

System 002

RT - 003 AUT - 001 Time 2 2 10 am

	741AD- 002	3	<b>9</b> Jc	ch <b>3</b>		p.,
Para. No.	Description	Pre Test	5/2/77 (2:50Pm lest In BI	Post Test	Requirements	Units
6.1	Calibrated RF insertion lass					
	PL = .32.5(1)	N/A	N/A	N/A	N/A	N/A
	Used in determining Silpook power.					
6.2	System turn on normal operation	V¥	-	*	Check if OK	Α΄ ;
6.3.1	Antenna radiated signal	~	<u></u>	~	Check if OK	N/A
	135 Hz	<u></u>	-	V	Chack if OK	P1/V
6.3.2	Antenna Speed	66667	66.667	66.669	65.667133	1~ c
6.4.1.1	Correct identity code	-	~	V	Check if OK	21/A
6.4.1.2	Identity period	38.0	37.0	37.0	37.5 ± 3.75	Suconds
6.4.2	Peak power  (1) Reading of beak power mater  Pm = 70 mw  (2) Convert to d3m - 10 log  Pm × 10 <sup>3</sup> = Pm d8m	70mu	80.mu	73 <sub>MW</sub>	N/A N/A	W's its
	Total power output in dBm  PmdBm * 12 =  *Insertion loss see 6.1 above.	50.9	51.5	51.1	50 dBm	d₽
6.4.3.3	Pulse count	7197	7279	7190	7200 ± 180	Counts
6.4.4.2	Pulse shape Width (50%) Rise time (10-20%) Fall time (90-10%)	34 2.0 2.4	3.4 2.0 2.4	3.4 2.0 2.4	3.5 ± 0.5 2 ± 0.25 2.5 ± 0.5	po ps ps
6.4.4.4	Pulse spacing	12.045	12.045	12.0	12.0 ± 0.1	μs
·.4,5.2	Delay - 60 ±10 µs 15 Hz trig to first burst pulse.	64ms V	CYUS	V	Check if OK	

131500-415 June 30, 1976

DATA SHEET

OPERATIONAL TESTS

AN/TRN-41 (Continued)

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-11						OLF
Para. No.	Description	Pre Test	Test	Post Test	Requirements	Units
6.4.5.3	Correct north Burst - 12 pulse pairs spaced 30 ± 0.1 µs	-	7	/	Check if OK	
6.4.5.5	Delay 60 ± 10 µs = 135 Hz trig to first burst pulse	64 us	(4M3	V	Check if OK	
6.4.5.6	Correct Aux burst - 6 pulse pairs spaced 24 ± 0.1 µs	~	~	~	Check if OK	
6.4.6.5	RT replies to 3300 interrogations	7755	2711	2765	≥2310 (Cou	ni Sec
6.4.6.7	Demand only mode - times to switch from ON to STEY within 10 seconds	-	~		Check if OK	-
\$.4.6.8	STBY mode	<u>-</u>	~	~	Check if OK	
.4.6.9	Demand Only mode - time to switch from STBY to ON		-	V	Check if OK	
<b>7</b> ∴.4.6.10	ON A!R mode 4/19/77	L	V	V	Check If OK	
6.4.7.1	DME ONLY mode	-		V	Check if OK	
6.4.7.2	Switch from DME to TACAN	~			Check if OK	
16.4.8.1	Antenna Alarm - Within four seconds	/			Check if OK	
6.4.8.2	Alarm Resot	-			Check if OK	
6.4.8.3	RT Alarm - Within five seconds	1	_	V	Check if OK	
16.4.8.4	Alumn Res et	-	-		Check if OK	

THE SYSTEM OCCASIONALLY ALARMED WITH CHAMBER DOOM CLOSED - HOLDER EVENTHING
TESTED OK - THIS WAS TRUE FOR BOTH THE FRE AND THE POST TESTS. AFTER THE POST
TESTS WAS RUN THE RT WAS OPENED UP. THE ALARM WAS DUE TO THE ATHUMBER OF BOTTOM
DETECTED PULSES BEING OUT PUT FROM THE TOOM A 7 CCA (648 DOWN DETECTOR). TO CORRECT
THIS AT RIS WAS CHANGED FROM A 180K TO A 220K (THIS IS A SELECTABLE RESISTED
AT TEST AND THE ORIGINAL RESISTOR UNLUE (180K) WAS MARCSINAL AND AFTER THE RT "AGED" DUE TO
THE PIEST HIGH TEMP TEST THE DET. NOISELY PULSES DROPED BELOW THE ALARM LIMIT CAUSING THE PROBLEM)
SINCE THE PROBLEM EXISTED BOTH BEFORE & AFTER THE ZONE HIGH TEMP. TEST MONTER FEELS THAT THE TEST
WAS POSSED AND NEED 110T BE REPERTED. RAD

E 3113A							
FACILITY:				NMENTAL DA			
T-	3	EN	IVIRONMENT	AL LABORATO	DRY — DEPT	r. 330	
A.O.	298 F	1/43		ENV. TECH.		TEST SCHED.	
ENGINEER			Systems	HONE		TEST COMPLETED	
TECHNICI	AN			PHONE		TEST REMOVED	
UNIT TITL	ANI	TRN-4	(TACAR	SER. 2	QTY. /	TOTAL UTILIZATION	
	RUCTIONS	TEST TO TERMINA	ΛTE:		BY:		ENVIRONMENTAL LABORATORY
0	TO PERATOR						SUPERVISORS APPROVAL
H /6	HTen						
		500-415					SIGNATURE
PAR. A	pendi	x IV-A					DATE
1977 DATE	TIME		С	HRONOLOGICAL RE	CORD OF TEST		INITIALS (PRINT)
1106	11:30 10	con ins	dela	to 7-3	Perfor	m functiona	/ //5
	,	entest				n i didina	
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4/28	15:10	11	-11	11 770	F		JCP
100	1630	-30ff					100
4/30	0945	T-30n.5	of tem	o undex	to 160	OF	JCD
5/2	1250	1-30ft					JCD
6/3	uso;	T.300.	set te	mo unde	+to-	8506	JEA
5/3	1700		// /	( n	11 _	65°F	DED
5/4	0915 (	Continant	4. Set	+ temp			JCD
	0030		X	11	in	11 70°F	UCD
5/4	1300	T-30ff		$>\!<$			
515	1100	7-3en .	e ten	vo udex	70-8	30F	UCD
5/5	1730		11 1	" "	11 -	65°F	JCD
5/6	0930		11 11	" "	11 +	73°F	SCD
5/6	1100	7-30KG					AX.
VERIEIED	& RELEASED I	ıy.					
TERIFIED	- HELEADED I		Q.	C. OR PROGRESS	118	COGNIZANT EN	GINEER